

Response to Office Action Mailed December 6, 2004
U.S. Application No. 10/633,134

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1 (original): A method of welding two pieces of metal to produce a weld joint comprised of a center-weld and a surface-weld, and having a specified thickness and optimized fracture toughness for an intended application, said method comprising the steps of:

- (a) selecting a first non-destructive examination technique that is suitable for detecting surface-breaking discontinuities in a metal used in said intended application;
- (b) determining a minimum surface-breaking discontinuity through-thickness dimension that is readily detectable by said first non-destructive examination technique;
- (c) selecting a second non-destructive examination technique that is suitable for detecting embedded discontinuities in a metal used in said intended application;
- (d) determining a minimum embedded discontinuity through-thickness dimension that is readily detectable by said second non-destructive examination technique;
- (e) determining a first toughness value that is adequate to substantially prevent fracture initiation in said weld joint from surface-breaking discontinuities having a through-thickness dimension that is substantially equal to said minimum surface-breaking discontinuity through-thickness dimension and a second toughness value that is adequate to substantially prevent fracture initiation in said weld joint from embedded discontinuities having a through-thickness dimension that is substantially equal to said minimum embedded discontinuity through thickness dimension;
- (f) designing a surface-weld welding procedure that will produce a surface-weld having a toughness value substantially equal to or greater than said first toughness value and a center-weld welding procedure that will produce a center-weld having a toughness value substantially equal to or greater than said second toughness value;

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- (g) creating said center-weld using said center-weld welding procedure; and
- (h) creating said surface-weld using said surface-weld welding procedure.

2 (canceled)